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Leon R. Turkevich
Farkas & Manelli PLLC
2000 M Street NW
7th Floor
Washington, DC 20036-3307

EXAMINER	
RYMAN, DANIEL J	
ART UNIT	PAPER NUMBER
2665	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/496,212	VISWANATH ET AL.	
	Examiner	Art Unit	
	Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 February 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 February 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Priority

1. If applicant desires priority under 35 U.S.C. 119(e) based upon a previously filed copending application, specific reference to the earlier filed application must be made in the instant application. This should appear as the first sentence of the specification following the title, preferably as a separate paragraph. The status of nonprovisional parent application(s) (whether patented or abandoned) should also be included. If a parent application has become a patent, the expression "now Patent No. _____" should follow the filing date of the parent application. If a parent application has become abandoned, the expression "now abandoned" should follow the filing date of the parent application.

If the application is a utility or plant application filed on or after November 29, 2000, any claim for priority must be made during the pendency of the application and within the later of four months from the actual filing date of the application or sixteen months from the filing date of the prior application. See 37 CFR 1.78(a)(2) and (a)(5). This time period is not extendable and a failure to submit the reference required by 35 U.S.C. 119(e) and/or 120, where applicable, within this time period is considered a waiver of any benefit of such prior application(s) under 35 U.S.C. 119(e), 120, 121 and 365(c).A priority claim filed after the required time period may be accepted if it is accompanied by a grantable petition to accept an unintentionally delayed claim for priority under 35 U.S.C. 119(e), 120, 121 and 365(c). The petition must be accompanied by (1) a surcharge under 37 CFR 1.17(t), and (2) a statement that the entire delay between the date the claim was due under 37 CFR 1.78(a)(2) or (a)(5) and the date the claim was filed was unintentional. The Commissioner may require additional information where there is a question

whether the delay was unintentional. The petition should be directed to the Office of Petitions,Box DAC, Assistant Commissioner for Patents, Washington, DC 20231.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract is greater than 150 words

3. The abstract of the disclosure is objected to because on page 7, line 4 "frame identifier" should be "frame identifier 42" as it appears in Fig. 2. Also on page 9, lines 9-10 "matched entry signatures" should be "matched entry signatures 82" as it appears in Fig. 4. Correction is required. See MPEP § 608.01(b).

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: there is no ref. 16 in Fig. 1 (see page 5, lines 1-2). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claim 4 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Claim 4 states that the signature is generated by combining the first and second hash keys using an OR operation; however, on page 8, lines 18-19 of the specification, it is stated that the keys, each being 12 to 16 bits, are combined to generate a signature, being 48 to 64 bits when four keys are combined. From the specification, it appears that the keys are not combined using an OR function but rather are concatenated to form the signature (4 keys * 12 bit/key = 48 bits).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claim 1-3 and 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lawler et al (USPN 5,978,951) in view of Dobbins et al (USPN 5,509,123) in further view of Sprunk et al (USPN 5,754,659).

9. Regarding claim 1, Lawler discloses a method in a network switch (bridge or router) of searching for a selected layer 3 switching entry for a received data packet (col. 1, lines 24-40 and col. 4, lines 20-32), the method comprising: generating first and second hash keys according to a prescribed hash function in response to first layer 3 information (network DA) and second layer

2 information (MAC SA) within the received data packet (col. 7, line 62-col. 8, line 25); and searching a table, configured for storing layer 3 signatures that index respective layer 3 switching entries according to the prescribed hash function for the selected layer 3 switching entry based on a match between the corresponding layer 2 and 3 keys and the keys for the received data packet (col. 4, lines 20-32; col. 4, lines 55-59; col. 5, lines 25-57). Lawler possibly does not disclose generating first and second hash keys according to a prescribed hash function in response to first and second layer 3 information; combining the first and second hash keys according to a prescribed combination into a signature for the received data packet; and searching a table, according to the prescribed combination. Dobbins discloses in a network layer router generating a single hash code according to a prescribed hash function in response to first and second layer 3 information (SA and DA) (col. 9, lines 31-54 and col. 10, lines 10-16 and lines 32-42); combining the two pieces of information from a packet into a single signature for the received data packet (col. 9, lines 31-54 and col. 10, lines 10-16 and lines 32-42); and searching a table, according to the prescribed combination (col. 9, lines 31-54 and col. 10, lines 10-16 and lines 32-42). Dobbins does this as a way to speed up the route decision process in a router in a protocol independent manner (col. 9, lines 31-54 and lines 56-58). It would have been obvious to one of ordinary skill in the art at the time of the invention to generate a single hash code according to a prescribed hash function in response to first and second layer 3 information (SA and DA); combine the two pieces of information from a packet into a single signature for the received data packet; and search a table, according to the prescribed combination in order to speed up the route decision process in a router in a protocol independent manner. Lawler in view of Dobbins possibly does not expressly state generating two hash keys corresponding to two

pieces of layer 3 information and then combining these hash keys into a single signature. Lawler discloses generating two individual hash keys based upon layer 2 and layer 3 information and searching according to the keys separately (col. 7, line 62-col. 8, line 25) and taking the two hash keys (one for layer 2 information and one for layer 3 information) and combining the hash keys to form a "conversation based hash" (col. 14, lines 52-col. 15, line 19) while Dobbins discloses combining the two pieces of layer 3 information and generating a hash signature based upon the combination (col. 10, lines 10-16 and lines 32-42). Sprunk discloses producing a separate hash key for each of an information group and then combining the hash keys into a combined hash key (signature) (col. 4, lines 32-39). Sprunk does this in order to provide a digital signature that "authenticates information of a plurality of different information groups" (col. 4, lines 32-39). Here, as broadly defined, one information group is the set of destination addresses and another information group is the set of source addresses such that the digital signature ensures that the destination address and source address have not been altered en route. It would have been obvious to one of ordinary skill in the art at the time of the invention to state generate two hash keys corresponding to two pieces of layer 3 information (DA and SA) and then combine these hash keys into a single signature in order to ensure that the DA and SA have not been corrupted en route.

10. Regarding claim 2, referring to claim 1, Lawler discloses that the generating step including detecting the first and second layer 2 and 3 information from the header of a packet as the data packet is received by a corresponding network switch port (col. 7, lines 45-50) where in order for the NIC to strip the information from the packet header it is inherent that the information must be detected. Lawler possibly does not expressly state that the packet including

the layer 3 information contains an IP header or that first and second layer 3 information is retrieved from the packet. Dobbins discloses IP is a very prevalent network protocol (col. 2, lines 58-61). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the layer 3 information be IP information since IP is a very prevalent network protocol. In addition, Dobbins discloses, in a router, using first and second layer 3 information (SA and DA) in order to perform routing table look-ups (col. 9, lines 31-54 and col. 10, lines 10-16 and lines 32-42). Dobbins does this as a way to make a route decision for a packet in a router (col. 9, lines 31-54 and lines 56-58). It would have been obvious to one of ordinary skill in the art at the time of the invention to retrieve first and second layer 3 information (SA and DA) in order to use the information to perform routing table look-ups in a network switch (router).

11. Regarding claim 3, referring to claim 2, Lawler in view of Dobbins in further view of Sprunk discloses that the detecting step includes selecting at least two of an IP source address, an IP destination address, a Transmission Control Protocol (TCP) source port, a TCP destination port, a User Datagram Protocol (UDP) source port, and a UDP destination port as the first and second layer 3 information from the IP header based on elements of each of the layer 3 switching entries used to generate the corresponding layer 3 signature (Dobbins: col. 2, lines 58-61; col. 9, lines 31-54; and col. 10, lines 10-16 and lines 32-42).

12. Regarding claim 5, referring to claim 1, Lawler in view of Dobbins in further view of Sprunk discloses verifying whether the selected layer 3 switching entry matches the received data packet (compares the network address (layer 3) associated with the code (hash code) to that of the identified set (entry)) (Lawler: col. 2, lines 32-42).

13. Regarding claim 6, referring to claim 5, Lawler in view of Dobbins in further view of Sprunk discloses fetching first and second layer 3 information from the selected layer 3 switching entry; and determining whether the first and second layer 3 information from the selected layer 3 switching entry matches the first and second layer 3 information within the received data packet (Lawler: col. 2, lines 32-42 and col. 5, lines 25-44 esp. lines 34-39 and Dobbins: col. 9, lines 31-54 and col. 10, lines 10-16 and lines 32-42 esp. col. 10, lines 35-38).

14. Regarding claim 7, referring to claim 1, Lawler in view of Dobbins in further view of Sprunk discloses detecting a group of the layer 3 switching entries (Lawler: cache row and Dobbins: bucket), each having a corresponding layer 3 signature that matches the signature for the received data packet (Lawler: col. 5, lines 25-44 and Dobbins: col. 10, lines 32-37); and verifying one entry from the group of the layer 3 switching entries matches the received data packet (Lawler: col. 5, lines 25-44 and Dobbins: col. 10, lines 32-37).

15. Regarding claim 8, referring to claim 7, Lawler in view of Dobbins in further view of Sprunk discloses that the verifying step includes: fetching the first and second layer 3 information for each of the entries of the group of layer 3 switching entries (Dobbins: col. 10, lines 32-37); and identifying the one entry having the corresponding first and second layer 3 information that matches the first and second layer 3 information within the received data packet (Dobbins: col. 10, lines 32-37).

16. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawler et al (USPN 5,978,951) in view of Dobbins et al (USPN 5,509,123) in further view of Sprunk et al (USPN 5,754,659) as applied to claim 7 above, and further in view of Egbert et al (USPN 6,084,877) in further view of Schnell (USPN 5,757,795).

17. Referring to claim 9, referring to claim 7, Lawler in view of Dobbins in further view of Sprunk possibly does not expressly state that the network switch is an integrated circuit chip; the searching step including searching a signature table located on the integrated circuit chip, and the fetching step including accessing the first and second layer 3 information from a policy table in a memory external to the integrated circuit chip. Egbert discloses having the switch on a single chip with various external memories to minimize chip size (Fig. 2A and col. 4, line 64-col. 5, line 5). Schnell discloses, in a network switch, that functional logic and memory blocks can be grouped as "several chips, a single, integrated chip, or an application specific integrated circuit (ASIC), etc." (col. 8, lines 44-50). Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to have the network switch be an integrated circuit chip; the searching step include searching a table located on the integrated circuit chip; and the fetching step include accessing 3 information from a policy table in a memory external to the integrated circuit chip since functional logic and memory blocks can be grouped as any combination of chips.

18. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawler et al (USPN 5,978,951) in view of Dobbins et al (USPN 5,509,123) in further view of Sprunk et al (USPN 5,754,659) as applied to claim 1 above, and further in view of Egbert et al (USPN 6,084,877).

19. Regarding claim 10, referring to claim 1, Lawler in view of Dobbins in further view of Sprunk possibly does not expressly state forwarding an identifier specifying the selected layer 3 switching entry from a network switch port, having received the received data packet, to layer 3 switching logic within the network switch. Egbert discloses, in a network switch, forwarding an

identifier specifying the selected layer 3 switching entry (hash key) from a network switch port, having received the received data packet, to layer 3 switching logic (Internal Rules Checker (IRC)) within the network switch (col. 6, line 66-col. 7, line 3 and col. 8, lines 19-43). Egbert does this in order to eliminate "the necessity in a rules checker of simultaneously generating hash keys for data packets received from multiple switch ports simultaneously" and in order to enable "the hash key to be generated while the remaining portion of the data packet is received, minimizing delays in packet latency through the network switch" (col. 2, lines 30-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to forward an identifier specifying the selected layer 3 switching entry (hash key) from a network switch port, having received the received data packet, to layer 3 switching logic (Internal Rules Checker (IRC)) within the network switch in order to eliminate the need for the rules checker to perform multiple hash key generations simultaneously and in order to lower the packet latency through the switch by allowing hash key generation while the remaining portion of the packet is received

20. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lawler et al (USPN 5,978,951) in view of Dobbins et al (USPN 5,509,123) in further view of Egbert et al (USPN 6,084,877) in further view of Schnell (USPN 5,757,795).

21. Regarding claim 11, Lawler discloses a method of identifying a layer 3 switching decision within an integrated network switch having a plurality of network ports and switching logic, the method including: storing, in a first table, layer 3 switching entries that identify data packet types based on layer 3 information, respectively, each layer 3 switching entry identifying a corresponding layer 3 switching decision to be performed by the integrated network switch (col. 4, lines 20-32) where "data stored in association with the network address" is taken to be

routing information which is a layer 3 switching decision. Lawler possibly does not disclose generating an entry signature for each of the layer 3 switching entries based on a prescribed hash operation performed on first and second portions of the corresponding layer 3 information; generating a packet signature for a data packet at the network port based on performing the prescribed hash operation on the first and second portions of the layer 3 information in the corresponding received data; and identifying one of the layer 3 switching entries for switching of the received data packet based on detecting a match between the packet signature and the corresponding entry signature. Dobbins discloses generating an entry signature for each of the layer 3 switching entries based on a prescribed hash operation performed on first and second portions of the corresponding layer 3 information (col. 10, lines 10-12); generating a packet signature for a data packet based on performing the prescribed hash operation on the first and second portions of the layer 3 information in the corresponding received data packet (col. 10, lines 32-37); and identifying one of the layer 3 switching entries for switching of the received data packet based on detecting a match between the packet signature and the corresponding entry signature(col. 10, lines 10-12) where Dobbins uses the signature to detect a match for a group and then the group is searched to find a specific entry and therefore an entry is identified based on a match between the packet signature and entry signature since this match is needed to locate the proper group ("bucket"). Dobbins does this as a way to speed up the route decision process in a router in a protocol independent manner (col. 9, lines 31-54 and lines 56-58). It would have been obvious to one of ordinary skill in the art at the time of the invention to generate an entry signature for each of the layer 3 switching entries based on a prescribed hash operation performed on first and second portions of the corresponding layer 3 information; generate a

packet signature for a data packet at the network port based on performing the prescribed hash operation on the first and second portions of the layer 3 information in the corresponding received data; and identify one of the layer 3 switching entries for switching of the received data packet based on detecting a match between the packet signature and the corresponding entry signature in order to speed up the route decision process in a router in a protocol independent manner. Lawler in view of Dobbins possibly does not expressly state that the packet signature is generated and the match identified by a network port, rather Lawler and Dobbins have another device perform these functions and report the information back to the network port. Egbert discloses, in a network switch, generating a hash key from a packet address within a switch port in order to eliminate "the necessity in a rules checker of simultaneously generating hash keys for data packets received from multiple switch ports simultaneously" and in order to enable "the hash key to be generated while the remaining portion of the data packet is received, minimizing delays in packet latency through the network switch" (col. 2, lines 30-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to generate the hash key within the port in order to eliminate the need for the rules checker to perform multiple hash key generations simultaneously and in order to lower the packet latency through the switch by allowing hash key generation while the remaining portion of the packet is received. Lawler in view of Dobbins in further view of Egbert possibly does not expressly state that a network port identifies the match. Schnell discloses, in a network switch, that each port stores a received packet until it can retrieve the routing logic of the packet at which time the port directs the packet through the switch to a destination port (Fig. 3; col. 3, lines 10-20 esp. lines 19-20;col. 4, lines 7-13; and col. 7, line 66-col. 8, line 36) where this is done in order to allow each input port to

direct a received packet to a proper output port. It would have been obvious to one of ordinary skill in the art at the time of the invention to have each port identify an entry in a routing table in order to allow each port to direct a received packet to a proper output port.

22. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lawler et al (USPN 5,978,951) in view of Dobbins et al (USPN 5,509,123) in further view of Egbert et al (USPN 6,084,877) in further view of Schnell (USPN 5,757,795) as applied to claim 11 above, and further in view of Sprunk et al (USPN 5,754,659).

23. Regarding claims 12 and 13, referring to claims 11 and 12, Lawler in view of Dobbins in further view of Egbert in further view of Schnell discloses that the step of generating an entry and packet signature includes: selecting at least two of an IP source address, an IP destination address, a Transmission Control Protocol (TCP) source port, a TCP destination port, a User Datagram Protocol (UDP) source port, and a UDP destination port as the first and second layer 3 information from the IP header based on elements of each of the layer 3 switching entries used to generate the corresponding layer 3 information (Dobbins: col. 2, lines 58-61; col. 9, lines 31-54; and col. 10, lines 10-16 and lines 32-42). Lawler in view of Dobbins in further view of Egbert in further view of Schnell possibly does not disclose generating first and second hash keys for the first and second portions of the corresponding layer 3 information in the layer 3 switching entry based on the prescribed hash operation and combining the first and second hash keys to form the entry and packet signature. Lawler discloses generating two individual hash keys based upon layer 2 and layer 3 information and searching according to the keys separately (col. 7, line 62-col. 8, line 25) and taking the two hash keys (one for layer 2 information and one for layer 3 information) and combining the hash keys to form a "conversation based hash" (col. 14, lines 52-

col. 15, line 19) while Dobbins discloses combining the two pieces of layer 3 information and generating a hash signature based upon the combination (col. 10, lines 10-16 and lines 32-42). Sprunk discloses producing a separate hash key for each of an information group and then combining the hash keys into a combined hash key (signature) (col. 4, lines 32-39). Sprunk does this in order to provide a digital signature that "authenticates information of a plurality of different information groups" (col. 4, lines 32-39). Here, as broadly defined, one information group is the set of destination addresses and another information group is the set of source addresses such that the digital signature ensures that the destination address and source address have not been altered en route. It would have been obvious to one of ordinary skill in the art at the time of the invention to state generate two hash keys corresponding to two pieces of layer 3 information (DA and SA) and then combine these hash keys into a single signature in order to ensure that the DA and SA have not been corrupted en route.

24. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lawler et al (USPN 5,978,951) in view of Dobbins et al (USPN 5,509,123) in further view of Egbert et al (USPN 6,084,877) in further view of Schnell (USPN 5,757,795) as applied to claim 11 above, and further in view of Chin (USPN 5,852,607).

25. Regarding claim 14, referring to claim 11, Lawler in view of Dobbins in further view of Egbert in further view of Schnell discloses that the step of identifying one of the layer 3 switching entries includes: searching a signature table within the integrated network switch for one of the entry signatures matching the packet signature (Lawler: col. 5, lines 25-44 and Dobbins: col. 10, lines 32-37). Lawler in view of Dobbins in further view of Egbert in further view of Schnell possibly does not expressly state retrieving from the signature table an address

location of the one layer 3 switching entry corresponding to the matched entry signature and accessing the one layer 3 switching entry from an external memory based on the retrieved address location since Lawler and Dobbins disclose that the signature or hash key is used to look up a bin or group but do not disclose how this is done (Lawler: col. 5, lines 25-44 and Dobbins: col. 10, lines 32-37). Chin details how the procedure of using hash keys or signatures works in order to look up hash bins such as is disclosed in Lawler and Dobbins. Chin discloses retrieving from the signature table (hash table) an address location of the one layer 3 switching entry (address of the linked list or hash bin containing the entry where the address of the hash bin, as broadly defined, is an address location of the one layer 3 switching entry as well as other switching entries) corresponding to the matched entry signature as well as accessing the one layer 3 switching entry from an external memory based on the retrieved address location (Chin: col. 1, line 59-col. 2, line 14). It would have been obvious to one of ordinary skill in the art to retrieve from the signature table an address location of the one layer 3 switching entry corresponding to the matched entry signature and accessing the one layer 3 switching entry from an external memory based on the retrieved address location in order to implement a search procedure using hashing to speed the process.

26. Regarding claim 15, referring to claim 14, Lawler in view of Dobbins in further view of Egbert in further view of Schnell in further view of Chin discloses the step of identifying the one layer 3 switching entry includes verifying that the one layer 3 switching entry matches the received data packet (Lawler: col. 5, lines 25-44; Dobbins: col. 10, lines 32-37; and Chin: col. 1, line 59-col. 2, line 14).

27. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dobbins et al (USPN 5,509,123) in view of Egbert et al (USPN 6,084,877) in further view of Schnell (USPN 5,757,795).

28. Regarding claim 16, Dobbins discloses an integrated network switch configured for executing layer 3 switching decisions, comprising: an index table that includes addresses of layer 3 switching entries that identify respective data packet types based on layer 3 information, the index table also including for each address entry a corresponding entry signature representing a combination of selected first and second portions of the corresponding layer 3 information hashed according to a prescribed hashing operation (col. 9, lines 31-54 and col. 10, lines 10-16 and lines 32-42). Dobbins possibly does not disclose a plurality of network switch ports, each comprising: (1) a frame identifier configured for obtaining header information within a data packet being received by the network switch port, and (2) a flow module configured for generating hash information (key) from the data packet based on a prescribed hash operation; and switching logic for executing the switching decision for the data packet based on the corresponding identified one switching entry. Egbert discloses, in a network switch, having a plurality of network switch ports, each comprising: (1) a frame identifier configured for obtaining the header information within a data packet being received by the network switch port (col. 2, lines 30-35 and lines 43-46) where it is inherent that the port has a frame identifier since the port is able to receive, strip the address, and generate a hash key from that address while the remaining portion of the frame is received, and (2) a flow module configured for generating a hash key for the header information from the data packet based on a prescribed hash operation (col. 2, lines 30-46); and switching logic (Internal Rules Checker (IRC)) for executing the

switching decision for the data packet based on the corresponding identified one switching entry (col. 6, line 66-col. 7, line 3 and col. 8, lines 19-43). Egbert does this in order to eliminate "the necessity in a rules checker of simultaneously generating hash keys for data packets received from multiple switch ports simultaneously" and in order to enable "the hash key to be generated while the remaining portion of the data packet is received, minimizing delays in packet latency through the network switch" (col. 2, lines 30-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to have a frame identifier configured for obtaining the header information within a data packet being received by the network switch port, to have a flow module configured for generating a hash key for the header information from the data packet based on a prescribed hash operation, and to have switching logic for executing the switching decision for the data packet based on the corresponding identified one switching entry in order to eliminate the need for the rules checker to perform multiple hash key generations simultaneously and in order to lower the packet latency through the switch by allowing hash key generation while the remaining portion of the packet is received. Dobbins in view of Egbert possibly does not disclose that the flow module identifies one of the switching entries for execution of the corresponding switching decision for the data packet based on a determined correlation between the packet signature and the corresponding entry signature since Egbert possibly discloses having a unit external to the switch port identify the switching decision. Schnell discloses, in a network switch, that each port stores a received packet until it can retrieve the routing logic of the packet at which time the port directs the packet through the switch to a destination port (Fig. 3; col. 3, lines 10-20 esp. lines 19-20; col. 4, lines 7-13; and col. 7, line 66-col. 8, line 36) where this is done in order to allow each input port to direct a received packet to a

proper output port. It would have been obvious to one of ordinary skill in the art at the time of the invention to have the flow module identify one of the switching entries for execution of the corresponding switching decision for the data packet based on a determined correlation between the packet signature and the corresponding entry signature in order to allow each port to direct a received packet to a proper output port.

29. Regarding claim 17, referring to claim 16, Dobbins in view of Egbert in further view of Schnell discloses in a flow module (Schnell: Fig. 3; col. 3, lines 10-20 esp. lines 19-20; col. 4, lines 7-13; and col. 7, line 66-col. 8, line 36) in response to determining the correlation between the packet signature and the entry signature, fetching selected portions of the layer 3 information from the one layer 3 switching entry for verification that the one layer 3 switching entry matches the data packet (Dobbins: col. 10, lines 35-38).

30. Regarding claim 18, referring to claim 16, Dobbins in view of Egbert in further view of Schnell discloses that the frame identifier selects at least two of an IP source address, and IP destination address, a Transmission Control Protocol (TCP) source port, a TCP destination port, a User Datagram Protocol (UDP) source port, and a UDP destination port as the first and second portions of layer 3 information within the data packet (Dobbins: col. 10, lines 10-16 and lines 32-42).

31. Regarding claim 19, referring to claim 16, Dobbins in view of Egbert in further view of Schnell discloses having an external memory interface (Egbert: Fig. 2A and col. 4, line 64-col. 5, line 5) configured for providing access by the flow module to the one layer 3 switching entry (Dobbins: col. 10, lines 10-16 and lines 32-42 and Schnell: Fig. 3; col. 3, lines 10-20 esp. lines 19-20; col. 4, lines 7-13; and col. 7, line 66-col. 8, line 36), stored in a memory external to the

integrated network switch, based on the corresponding address entry (Egbert: Fig. 2A; col. 2, lines 30-46; col. 4, line 64-col. 5, line 5; col. 6, line 66-col. 7, line 3; and col. 8, lines 19-43) where Egbert discloses having an external memory interface (Fig. 2A: external rules checker, ref. 42) accessed in order to provide the switching entry, Dobbins discloses having the switching entry be layer 3 and Schnell discloses having all of this done by a flow module located on a switch port.

Conclusion

32. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. McAuley et al (USPN 5,386,413) see col. 3, line 60-col. 4, line 15.Wilford (USPN 6,157,641) which describes packet switching of layer 3 packets.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The examiner can normally be reached on Mon.-Fri. 7:00-5:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703)308-6602. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-6743 for regular communications and (703)308-9051 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)305-3900.

Daniel J. Ryman
Examiner
Art Unit 2665

DJR

HUY D. VU
SUPERVISORY PATENT EXA...
TECHNOLOGY CENTER 260...

Daniel J. Ryman
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